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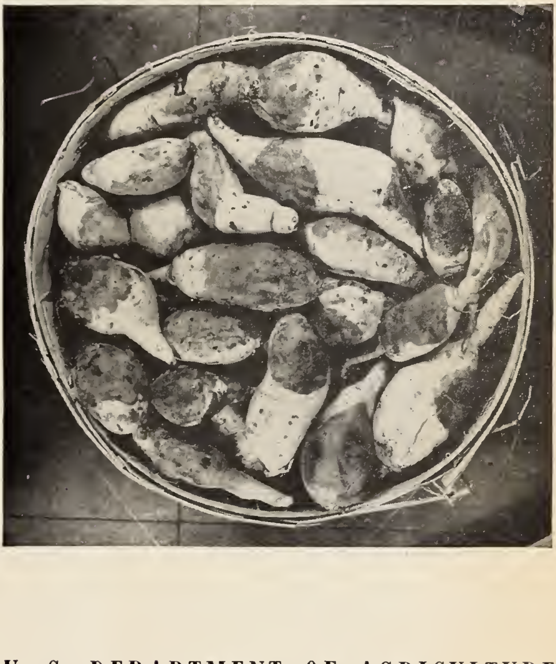
Preventing *Black Rot* Losses in SWEETPOTATOES



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Importance of Recognizing Black Rot

Sweetpotato growers and handlers in this country still suffer heavy losses—millions of dollars each year—from black rot. This disease is found in all sweetpotato-growing sections; it attacks all varieties.

Much of the loss occurs during shipment or in storage and marketing. You may grow and harvest a good crop of sweetpotatoes and provide expensive storage for them, and still you may have to throw out a large part of the crop because of black rot damage. Even if the crop is shipped directly to market, black rot may cause serious loss from spoilage.

Black rot of sweetpotatoes is, however, a preventable disease. All that is needed is to use every year methods that are already known.

Black rot is caused by a fungus, *Endoconidiophora fimbriata*. This fungus is as bad as its name sounds. It may cause black rot on any of the underground parts of the sweetpotato plant. On the roots the disease is easily recognized by the firm, shallow spots it causes. In the early stages these shallow spots are circular and brown. As they enlarge they become greenish black to black. (See cover illustration.) Often small, black bristles (the fruiting bodies of the fungus) appear on the spots. Flesh beneath the spots also is greenish black or black. The decayed part, as well as the apparently sound flesh next to it, tastes bitter. The presence of the rot destroys the food value of the sweetpotatoes. Also, the sale of black-rotted sweetpotatoes has a bad effect on the market for sound ones.

Prevention of Black Rot in the Growing Crop

Prevention of black rot must start in the plant bed. If your hotbed has been used before, remove the soil, sand, etc. Clean and wash the sides and bottom of the framework with a disinfectant. A solution of bluestone (1 pound dissolved in 6 gallons of water) or of commercial formaldehyde (1 part to 25 parts of water) may be used. After being washed, the framework should dry overnight before the hotbed is filled.

If possible, use soil or sand from a plot that has not been used for sweetpotatoes before. If you do not have such a plot, use soil from an area where a crop free of black rot has been grown in a 3- or 4-year rotation.

The bedding stock also must, of course, be free of black rot. It is very important to select disease-free bedding stock from year to year. As an added precaution, dip the stock for a moment into a disinfectant such as Spergon[1] (1 pound of the wettable form in 4 gallons of water). Or soak it for 8 or 10 minutes in corrosive sublimate[2] (1 ounce in 8 gallons of water).

Recent work on black rot at the Maryland Agricultural Experiment Station and that on stem-end rot at the Kansas Agricultural Experiment Station indicates that a better yield of plants results from the use of Spergon than from the use of corrosive sublimate. Corrosive sublimate, however, is a more powerful disinfectant. Other good disinfectants may be used. Information about their suitability may be obtained from the Extension Service or from your State agricultural college.

Disinfectants, especially corrosive sublimate, are very poisonous. No sweetpotatoes treated with them should ever be used as human food or fed to animals. The solution left after treatment should be carefully disposed of or kept out of the reach of children or animals. Corrosive sublimate should not be used in a metal container.

Propagating by means of healthy vine cuttings is a good way to prevent black rot. The cuttings should be taken only from plants known to be healthy. The plants should be growing in land not previously used for sweetpotatoes or in land known to be free of the black rot fungus.

Vine cuttings are very useful for bedding stock. It is wasted effort, however, to grow healthy plants and then to set them out in fields infested with the black rot fungus. The plants should be set out on new ground or on soil that has not produced sweetpotatoes for several years. Rotation of crops helps to control black rot, because the fungus that causes black rot attacks sweetpotatoes only.

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[1] Chloranil (tetrachloro-p-benzoquinone).

[2] Mercuric chloride.

Black rot is easily spread. Keep that in mind in growing and in cultivating sweetpotatoes and later in digging, packing, washing (if you do it), and storing the crop. Washing may spread the disease to sound sweetpotatoes.

Sanitation in the Storage House

Keeping the packing shed and storage house clean will help a lot in controlling the disease. Clean the floor frequently during packing and storing. Pick up all crushed and rotting sweetpotatoes that drop from the baskets. Such material should never be dumped on manure piles or hauled to the sweetpotato field.

As soon as the crop is shipped the storage house should be cleaned thoroughly. Make sure that rotting sweetpotatoes and other trash that might carry black rot are cleaned out. None of the trash should be dumped where sweetpotatoes are to be grown, on manure piles, or where drainage from the dump would flow onto a sweetpotato field.

Handling the Crop When Black Rot Is Present

If black rot is present at digging time, you may be sure that it will continue to develop in storage. If you have to throw out sweetpotatoes because of black rot at digging time, you will have more to throw out by the end of the curing period and still more by the end of the storage season.

It is probable that some of the infections that develop during curing and storage are actually present before digging, but the spots [illegible] show up until later. Infections th[illegible] curing and storing could come from contaminated soil sticking to the sweetpotatoes at digging time. Grow a crop of healthy sweetpotatoes if you expect to store them satisfactorily.

When black rot is present, it is probably best to cure the sweetpotatoes at 85° F. for 10 days before shipment. This will allow time for the development of much of the rot that would otherwise show up in transit. Curing will save the expense of sorting out the rotted sweetpotatoes at market. It will also save the money that would otherwise have to be paid for freight on the black rot damaged sweetpotatoes.

Of course, you may be able to ship without curing to a local or nearby market for immediate consumption. If such noncured sweetpotatoes are not eaten at once, however, black rot will continue to develop. It is usually best not to wash noncured sweetpotatoes that are being shipped from a crop in which black rot is present.

Practical Recommendations

It is not hard to prevent black rot of sweetpotatoes, but care and patience are needed. The continued use of the methods outlined in this leaflet should in time wipe out black rot. The observance of the following precautions should give a good return in dollars and cents for your time and effort:

1. *Clean storage house thoroughly as soon as it is emptied.*
2. *Clean up all crushed sweetpotatoes and other trash around the storage house.*
3. *Clean and disinfect the framework of the plant bed.*
4. *Use clean bedding soil or sand.*
5. *For bedding, use sweetpotatoes free of black rot.*
6. *Disinfect the bedding stock.*
7. *If possible, grow bedding stock in a special plot.*
8. *As an extra precaution, use vine cuttings from healthy plants as bedding stock.*
9. *Rotate sweetpotatoes with other crops. Do not plant on contaminated land.*
10. *When black rot is present, market promptly as fresh stock or cure and market promptly. Do not store.*
11. *Remember that washing is apt to spread black rot.*

This pamphlet was written by J. S. Cooley, senior pathologist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, and R. J. Haskell, senior plant pathologist, Extension Service. It supersedes A. W. I. Leaflet 27, Saving Sweetpotatoes from Black Rot.

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